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Goldstein Fox**
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*Admitted only in Maryland
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*Practice Limited to
Federal Agencies

January 13, 2004

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Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Art Unit 1642

Re: U.S. Utility Patent Application
Application No. 09/720,086; 102(e): July 23, 2001
For: **De novo DNA Cytosine Methyltransferase Genes, Polypeptides and
Uses Thereof**
Inventors: Li et al.
Our Ref: 0609.4560002/JAG/KRM/DJN

Sir:

Transmitted herewith for appropriate action are the following documents:

1. Information Disclosure Statement Under 37 C.F.R. § 1.97(c);
2. Fee Transmittal (Form PTO/SB/17);
3. Form PTO-1449 (16 sheets citing documents AA1, AL1, and AR1-16);
4. Copies of documents AA1, AL1, and AR1-AR16;
5. PTO-2038 Credit Card Payment Form for \$ 180.00 to cover:
\$ 180.00 Submission of Information Disclosure Statement;
6. Return postcard.

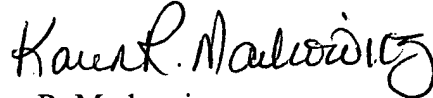
It is respectfully requested that the attached postcard be stamped with the date of filing of these documents, and that it be returned to our courier. In the event that extensions of time are necessary to prevent abandonment of this patent application, then such extensions of time are hereby petitioned.

Commissioner for Patents
January 13, 2004
Page 2

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



Karen R. Markowicz
Agent for Applicants
Registration No. 36,351

KRM/DJN/cjs
Enclosures

215923.1



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Li *et al.*

Appl. No. 09/720,086

102(e): July 23, 2001

For: ***De novo* DNA Cytosine
Methyltransferase Genes,
Polypeptides and Uses Thereof**

Confirmation No. 6968

Art Unit: 1642

Examiner: Harris, A.M.

Atty. Docket: 0609.4560002/JAG/KRM/DJN

Information Disclosure Statement under 37 C.F.R. § 1.97(c)

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

Listed on accompanying Form PTO-1449 are documents that may be considered material to the examination of this application, in compliance with the duty of disclosure requirements of 37 C.F.R. §§ 1.56, 1.97 and 1.98. A copy of each document is also provided.

Where the publication date of a listed document does not provide a month of publication, the year of publication of the listed document is sufficiently earlier than the effective U.S. filing date and any foreign priority date so that the month of publication is not in issue. Applicants have listed publication dates on the attached PTO-1449 based on information presently available to the undersigned. However, the listed publication dates should not be construed as an admission that the information was actually published on the date indicated.

Applicants reserve the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered.

This statement should not be construed as a representation that a search has been made, or that information more material to the examination of the present patent application does not exist. The Examiner is specifically requested not to rely solely on the material submitted herewith.

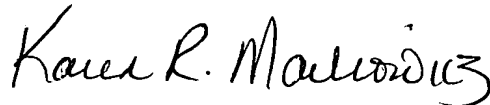
This Information Disclosure Statement is being filed more than three months after the U.S. filing date AND after the mailing date of the first Office Action on the merits, but before the mailing date of a Final Rejection, or Notice of Allowance, or an action that otherwise closes prosecution in the application. Attached is our PTO-2038 Credit Card Payment Form in the amount of \$180.00 in payment of the fee under 37 C.F.R. § 1.17(p).

It is respectfully requested that the Examiner initial and return a copy of the enclosed PTO-1449, and indicate in the official file wrapper of this patent application that the documents have been considered.

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036.

Respectfully submitted,

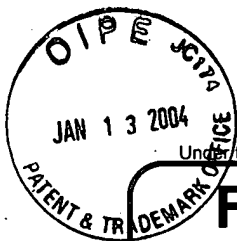
STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



Karen R. Markowicz
Agent for Applicants
Registration No. 36,351

Date: 1/13/04

1100 New York Avenue, N.W.
Washington, D.C. 20005-3934
(202) 371-2600



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FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 180.00

Complete if Known

Application Number	09/720,086
Filing Date	(102(e)) July 23, 2001
First Named Inventor	Li et al.
Examiner Name	Harris A.M.
Art Unit	1642
Attorney Docket No.	0609.4560002/JAG/KRM/DJN

METHOD OF PAYMENT (check all that apply)

☐ Check ☒ Credit card ☐ Money Order ☒ Other** ☐ None

☐ **Charge any deficiencies or credit any overpayments in the fees to Deposit Acct. No. 19-0036.

Deposit Account Number: 19-0036
Deposit Account Name: Sterne Kessler, Goldstein & Fox P.L.L.C.

The Director is authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☐ Credit any overpayments

☐ Charge any additional fee(s) or any underpayment of fee(s)

☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1001 770	2001 385	Utility filing fee	
1002 340	2002 170	Design filing fee	
1003 530	2003 265	Plant filing fee	
1004 770	2004 385	Reissue filing fee	
1005 160	2005 80	Provisional filing fee	
SUBTOTAL (1) (\$)			

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims	Extra Claims	Fee from below	Fee Paid
Independent Claims	- 20 ** =	X	
Multiple Dependent	- 3 ** =	X	

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description
1202 18	2202 9	Claims in excess of 20
1201 86	2201 43	Independent claims in excess of 3
1203 290	2203 145	Multiple dependent claim, if not paid
1204 86	2204 43	** Reissue independent claims over original patent
1205 18	2205 9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$)

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Small Entity

Fee Code (\$)	Fee Code (\$)	Fee Description	Fee Paid
1051 130	2051 65	Surcharge - late filing fee or oath	
1052 50	2052 25	Surcharge - late provisional filing fee or cover sheet	
1053 130	1053 130	Non-English specification	
1812 2,520	1812 2,520	For filing a request for ex parte reexamination	
1804 920*	1804 920*	Requesting publication of SIR prior to Examiner action	
1805 1,840*	1805 1,840*	Requesting publication of SIR after Examiner action	
1251 110	2251 55	Extension for reply within first month	
1252 420	2252 210	Extension for reply within second month	
1253 950	2253 475	Extension for reply within third month	
1254 1,480	2254 740	Extension for reply within fourth month	
1255 2,010	2255 1,005	Extension for reply within fifth month	
1401 330	2401 165	Notice of Appeal	
1402 330	2402 165	Filing a brief in support of an appeal	
1403 290	2403 145	Request for oral hearing	
1451 1,510	1451 1,510	Petition to institute a public use proceeding	
1452 110	2452 55	Petition to revive - unavoidable	
1453 1,330	2453 665	Petition to revive - unintentional	
1501 1,330	2501 665	Utility issue fee (or reissue)	
1502 480	2502 240	Design issue fee	
1503 640	2503 320	Plant issue fee	
1460 130	1460 130	Petitions to the Commissioner	
1807 50	1807 50	Processing fee under 37 CFR 1.17(q)	
1806 180	1806 180	Submission of Information Disclosure Stmt	180.00
8021 40	8021 40	Recording each patent assignment per property (times number of properties)	
1809 770	2809 385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810 770	2810 385	For each additional invention to be examined (37 CFR 1.129(b))	
1801 770	2801 385	Request for Continued Examination (RCE)	
1802 900	1802 900	Request for expedited examination of a design application	

Other fee (specify)

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$) 180.00

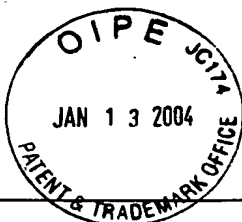
SUBMITTED BY

Name (Print/Type)	Karen R. Markowicz	Registration No. (Attorney/Agent)	36,351	Telephone	(202) 371-2600
Signature	Karen R. Markowicz	Date	1/13/04		

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

This collection of information is required by 37 CFR 1.17 and 1.27. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



FORM PTO-1449 <u>INFORMATION DISCLOSURE STATEMENT</u>	ATTY. DOCKET NO. 0609.4560002/JAG/KRM/DJN	APPLICATION NO. 09/720,086
	APPLICANT Li et al.	
	102(e) July 23, 2001	GROUP 1642

U.S. PATENT DOCUMENTS							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	FILING DATE
	AA1	5,578,716	11/26/1996	Szyf et al.			12/01/1993
	AB						
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FOREIGN PATENT DOCUMENTS							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION
	AL1	WO 92/06985	04/30/1992	WIPO			Yes No
	AM						Yes No
	AN						Yes No
	AO						Yes No
	AP						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)			
AR	<u>1</u>	Aoki, A., et al., "Enzymatic properties of de novo-type mouse DNA (cytosine-5) methyltransferases," Nucl. Acids Res. 29:3506-3512, Oxford University Press (September 2001)	
AS	<u>1</u>	Ariel, M., et al., "Gamete-specific methylation correlates with imprinting of the murine Xist gene," Nat. Genet. 9:312-315, Nature Publishing Group (1995)	
AT	<u>1</u>	Bachman, K.E., et al., "Dnmt3a and Dnmt3b Are Transcriptional Repressors That Exhibit Unique Localization Properties to Heterochromatin," J. Biol. Chem. 276:32282-32287, The American Society for Biochemistry and Molecular Biology, Inc. (August 2001)	

EXAMINER	DATE CONSIDERED
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EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.



FORM PTO-1449

INFORMATION DISCLOSURE STATEMENT

ATTY. DOCKET NO.
0609.4560002/JAG/KRM/DJN

APPLICATION NO.
09/720,086

APPLICANT
Li et al.

102(e)
July 23, 2001

GROUP
1642

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FOREIGN PATENT DOCUMENTS

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	AL						Yes No
	AM						Yes No
	AN						Yes No
	AO						Yes No
	AP						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

AR	2	Baylin, S.B., et al., "Alterations in DNA Methylation: A Fundamental Aspect of Neoplasia," <i>Adv. Cancer Res.</i> 72:141-196, Academic Press (February 1998)
AS	2	Bestor, T., et al., "Cloning and Sequencing of a cDNA Encoding DNA Methyltransferase of Mouse Cells," <i>J. Mol. Biol.</i> 203:971-983, Academic Press (1988)
AT	2	Bestor, T.H., "Activation of mammalian DNA methyltransferase by cleavage of a Zn binding regulatory domain," <i>EMBO J.</i> 11:2611-2617, Oxford University Press (1992)

EXAMINER

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FOREIGN PATENT DOCUMENTS

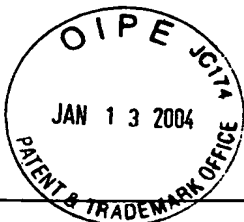
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION
	AL						Yes No
	AM						Yes No
	AN						Yes No
	AO						Yes No
	AP						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

AR	3	Brandeis, M., et al., "The ontogeny of allele-specific methylation associated with imprinted genes in the mouse," <i>EMBO J.</i> 12:3669-3677, Oxford University Press (1993)
AS	3	Brockdorff, N., "Convergent themes in X chromosome inactivation and autosomal imprinting," in <i>Genomic Imprinting</i> , Reik, W., and Surani, A., eds., Oxford University Press, Oxford, UK, pp. 191-210 (December 1997)
AT	3	Chaillet, J.R., et al., "Parental-Specific Methylation of an Imprinted Transgene in Established during Gametogenesis and Progressively Changes during Embryogenesis," <i>Cell</i> 66:77-83, Cell Press (1991)

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	AL						Yes No
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	AN						Yes No
	AO						Yes No
	AP						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)							
	AR	<u>4</u>	Chen, T., et al., "A Novel Dnmt3a Isoform Produced from an Alternative Promoter Localizes to Euchromatin and Its Expression Correlates with Active de Novo Methylation," <i>J. Biol. Chem.</i> 277:38746-38754, The American Society for Biochemistry and Molecular Biology, Inc. (October 2002)				
	AS	<u>4</u>	Cheng, X., "Structure and function of DNA methyltransferases," <i>Annu. Rev. Biophys. Biomol. Struct.</i> 24:293-318, Annual Reviews, Inc. (1995)				
	AT	<u>4</u>	Finnegan, E.J., and Dennis, E.S., "Isolation and identification by sequence homology of a putative cytosine methyltransferase from <i>Arabidopsis thaliana</i> ," <i>Nucl. Acids Res.</i> 21:2383-2388, Oxford University Press (1993)				

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APPLICANT
Li et al.

102(e)
July 23, 2001

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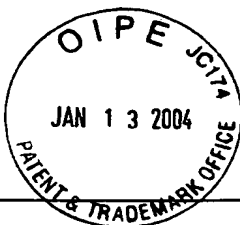
OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

AR	<u>5</u>	Flynn, J., et al., "Murine DNA Cytosine-C ⁵ Methyltransferase: Pre-Steady- and Steady-State Kinetic Analysis with Regulatory DNA Sequences," <i>Biochem.</i> 35:7308-7315, American Chemical Society (1996)
AS	<u>5</u>	Flynn, J., et al., "DNA Binding Discrimination of the Murine DNA Cytosine-C ⁵ Methyltransferase," <i>J. Mol. Biol.</i> 279:101-116, Academic Press (May 1998)
AT	<u>5</u>	Hata, K., et al., "Dnmt3L cooperates with the Dnmt3 family of de novo DNA methyltransferases to establish maternal imprints in mice," <i>Develop.</i> 129:1983-1993, Company of Biologists Ltd. (April 2002)

EXAMINER

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OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

AR	<u>6</u>	Jähner, D., and Jaenisch, R., "DNA Methylation in Early Mammalian Development," in <i>DNA Methylation. Biochemistry and Biological Significance</i> , Razin, A., eds., Springer-Verlag, New York, NY, pp. 189-219 (1984)
AS	<u>6</u>	Jentsch, S., et al., "DNA methyltransferases affecting the sequence 5'CCGG," <i>Nucl. Acids Res.</i> 9:2753-2759, IRL Press (1981)
AT	<u>6</u>	Jones, P.A., and Gonzalgo, M.L., "Altered DNA methylation and genome instability: A new pathway to cancer?," <i>Proc. Natl. Acad. Sci. USA</i> 94:2103-2105, National Academy of Sciences (March 1997)

EXAMINER

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	AO						Yes No
	AP						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)			
AR	2	Klimašauskas, S., et al., "The sequence specificity domain of cytosine-C5 methylases," <i>Nucl. Acids Res.</i> 19:6183-6190, IRL Press at Oxford University Press (1991)	
AS	2	Kumar, S., et al., "The DNA (cytosine-5) methyltransferases," <i>Nucl. Acids Res.</i> 22:1-10, Oxford University Press (1994)	
AT	2	Laird, P.W., and Jaenisch, R., "The Role of DNA Methylation in Cancer Genetics and Epigenetics," <i>Annu. Rev. Genet.</i> 30:441-464, Annual Reviews Inc. (1996)	

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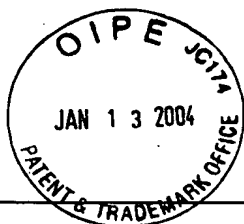
OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

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AT	8	Leonhardt, H., et al., "A Targeting Sequence Directs DNA Methyltransferase to Sites of DNA Replication in Mammalian Nuclei," <i>Cell</i> 71:865-873, Cell Press (1992)

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INFORMATION DISCLOSURE STATEMENT

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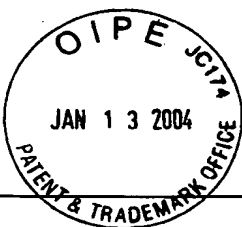
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AR	9	Li, E., et al., "Targeted Mutation of the DNA Methyltransferase Gene Results in Embryonic Lethality," Cell 69:915-926, Cell Press (1992)
AS	9	Li, E., "Role of DNA methylation in mammalian development," in <i>Genomic Imprinting</i> , Reik, W., and Surani, A. eds., Oxford University Press, Oxford, UK, pp. 1-20 (December 1997)
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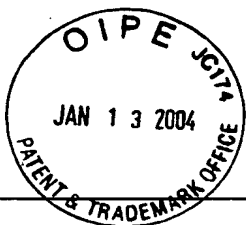
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	AS	<u>10</u>	Okano, M., et al., "Dnmt2 is not required for <i>de novo</i> and maintenance methylation of viral DNA in embryonic stem cells," <i>Nucl. Acids Res.</i> 26:2536-2540, Oxford University Press (June 1998)
	AT	<u>10</u>	Okano, M., et al., "DNA Methyltransferases Dnmt3a and Dnmt3b Are Essential for <i>De Novo</i> Methylation and Mammalian Development," <i>Cell</i> 99:247-257, Cell Press (October 1999)

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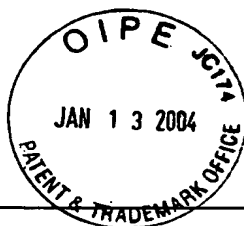
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AR	<u>11</u>	Okano, M., and Li, E., "Genetic Analyses of DNA Methyltransferase Genes in Mouse Model System," <i>J. Nutr.</i> 132:2462S-2465S, American Institute of Nutrition (August 2002)
AS	<u>11</u>	Pradhan, S., et al., "Baculovirus-mediated expression and characterization of the full-length murine DNA methyltransferase," <i>Nucl. Acids Res.</i> 25:4666-4673, Oxford University Press (November 1997)
AT	<u>11</u>	Qu, G.-Z., et al., "Satellite DNA hypomethylation vs. overall genomic hypomethylation in ovarian epithelial tumors of different malignant potential," <i>Mutat. Res.</i> 423:91-101, Elsevier Science (January 1999)

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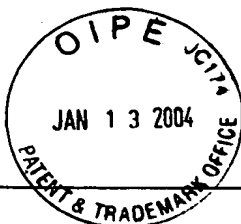
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	AM						Yes No
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	AP						Yes No

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AR	<u>12</u>	Razin, A., and Cedar, H., "DNA methylation and embryogenesis," in <i>DNA Methylation: Molecular Biology and Biological Significance</i> , Jost, J.P., and Saluz, H.P., eds., Birkhäuser Verlag, Basel, Switzerland, pp. 343-357 (1993)	
AS	<u>12</u>	Reid, G.K., et al., "Selective inhibition of DNA methyltransferase enzymes as a novel strategy for cancer treatment," <i>Curr. Opin. Mol. Ther.</i> 4:130-137, Current Drugs (April 2002)	
AT	<u>12</u>	Robertson, K.D., et al., "The human DNA methyltransferases (DNMTs) 1, 3a and 3b: coordinate mRNA expression in normal tissues and overexpression in tumors," <i>Nucl. Acids Res.</i> 27:2291-2298, Oxford University Press (June 1999)	

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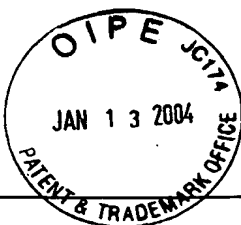
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	AR	<u>13</u>	Stöger, R., et al., "Maternal-Specific Methylation of the Imprinted Mouse <i>Igf2r</i> Locus Identifies the Expressed Locus as Carrying the Imprinting Signal," <i>Cell</i> 73:61-71, Cell Press (1993)
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	AT	<u>13</u>	Szyf, M., and Detich, N., "Regulation of the DNA Methylation Machinery and Its Role in Cellular Transformation," in <i>Progress in Nucleic Acid Research and Molecular Biology</i> , Moldave, K., ed., Academic Press, San Diego, CA, pp. 47-79 (August 2001)

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	AN						Yes No
	AO						Yes No
	AP						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)			
AR	<u>14</u>	Trasler, J.M., et al., "DNA Methyltransferase in Normal and <i>Dnmt</i> ⁿ / <i>Dnmt</i> ⁿ Mouse Embryos," <i>Dev. Dyn.</i> 206:239-247, Wiley-Liss, Inc. (1996)	
AS	<u>14</u>	Tremblay, K.D., et al., "A paternal-specific methylation imprint marks the alleles of the mouse <i>H19</i> gene," <i>Nat. Genet.</i> 9:407-413, Nature Publishing Group (1995)	
AT	<u>14</u>	Tucker, K.L., et al., "Germ-line passage is required for establishment of methylation and expression patterns of imprinted but not of nonimprinted genes," <i>Genes & Develop.</i> 10:1008-1020, Cold Spring Harbor Laboratory Press (1996)	

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AR	<u>15</u>	Yen, R.-W. C., et al., "Isolation and Characterization of the cDNA encoding human DNA methyltransferase," <i>Nucl. Acids Res.</i> 20:2287-2291, Oxford University Press (1992)
AS	<u>15</u>	Yoder, J.A., and Bestor, T.H., "A candidate mammalian DNA methyltransferase related to pmtlp of fission yeast," <i>Hum. Mol. Genet.</i> 7:279-284, Oxford University Press (February 1998)
AT	<u>15</u>	Zuccotti, M., and Monk, M., "Methylation of the mouse Xist gene in sperm and eggs correlates with imprinted Xist expression and paternal X-inactivation," <i>Nat. Genet.</i> 9:316-320, Nature Publishing Group (1995)

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	AR	<u>16</u>	International Search Report for International Application No. PCT/US99/14373, mailed December 10, 1999, European Patent Office, Netherlands
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